

Re: Confused about Flash

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- *From:* "mkaras" <mkaras@xxxxxxxxxxxxxxxxxxxxxx>
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John Larkin wrote:

One of my engineers left to go Indonesia and teach, or something, and I have inherited 17,000 lines of really ghastly, buggy, ugly assembly code for an embedded product. It looks easier to rewrite it from scratch than to try to fix it, so that keeps me off the streets for the rest of the month.

This thing has an ST flash chip, M29W400BB, which is 4M bits, used in 256kx16 mode. The datasheet is typically confusing. So please check me on this:

If I write a secret combination of words to a secret list of addresses in the chip, six writes total, I can tell it to erase one of its 11 sub-blocks of memory. Apparently I can't do normal reads during erase, so I can't run the code out of the same flash I'm erasing. I have to erase a block (to all 1's, like an eprom) before I can program it. A block erase can take up to 6 seconds, but I can poll it to see when it's done. Apparently I select which block is to be erased by writing 0x30 into any address of that block, as the last operation of the erase command.

John:

Many of the x8 and x16 FLASH devices in the market place use very similar programming algorithms. As such a search for App notes at other vendors sites can lead you to good insights for your ST part. For example look at this web link for some AMD algorithm flow charts that may help you:

http://www.ate.agilent.com/pcb_test/ent_all/3070/3070_manuals/user_UX/1INTRFSH.PDF

It is also possible to find some C and assembly language code samples that perform the standardized programming algorithms. Please let me know if you cannot find any and I can send you some samples to look at. My code is in x86 assembly language so should not be that hard to translate to other microcontroller platforms.

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– mkaras

(The datasheet is cute. It's not obvious whether writing to address "BA" means "write to address 0xBA" or "write to an address in the block". Seems like the latter makes sense.)

Write 0xAA to 0x555
0x55 to 0x2AA
0x80 to 0x555
0xAA to 0x555
0x55 to 0x2AA
0x30 to any address in block to be erased

wait 6 secs or poll for erase done

Programming flash is less clear. Apparently I execute a chunk of secret w